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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,505	10/30/2003	Yasuo Takebe	61352-046	5764

7590 02/23/2007

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EXAMINER	
ALEJANDRO, RAYMOND	
ART UNIT	**PAPER NUMBER**
1745	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/696,505	TAKEBE ET AL.	
	Examiner	Art Unit	
	Raymond Alejandro	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-79 and 82-108* is/are pending in the application.

4a) Of the above claim(s) *1-79 and 82-106* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *107 and 108* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

This office action is responsive to the amendment filed on 01/23/07. The applicant has overcome the objections and two of the rejections under Section 102. Refer to the abovementioned amendment for specific details on applicant's rebuttal arguments. However, the present claims (newly added claims 107 and 108) are finally rejected over art as seen below and for the reasons of record:

Election/Restrictions and Claim Disposition

1. Claims 1-79 and 82-106 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 08/21/06.

2. Claims 80-81 have been cancelled.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 108 is rejected under 35 U.S.C. 102(b) as being anticipated by Dine et al 2002/0098393.

Dine et al disclose a procedure for shutting down an operating fuel cell system that recirculates a portion of the anode exhaust in a recycle loop, such a procedure includes disconnecting the primary load from the external circuit, stopping the flow of air to the cathode, and applying an auxiliary resistive load across the cells to reduce and/or limit the cell voltage and reduce the cathode potential while the fuel is still flowing to the anode and the anode exhaust is recirculating (ABSTRACT/ P0035-0037/ CLAIMS 1 & 7).

(***Emphasis supplied→***) Dine et al also disclose that upon an uncontrolled shut-down some of the residual hydrogen and some of the oxygen in their respective anode/cathode flow fields diffuse across the PEM (each to the opposite side of the cell) and react on the catalyst to form water (P0009). *Thus, this implies that the cathode receives water after terminating operation of the fuel cell, and thus, the restoring operation inherently takes place at the cathode.*

Fuel cell system of Dine et al comprises a fuel cell 102 comprising an anode 104, a cathode 106, and an electrolyte layer 108 disposed between the anode and cathode (P0027); and a cathode flow field plate 120 and an anode flow field plate 118 for carrying respective reactants (oxidant/air and hydrogen-containing fuel (P0027-0028).

Accordingly, the present claim is fully anticipated.

5. Claim 107 is rejected under 35 U.S.C. 102(b) as being anticipated by Fuller et al 6068941.

Figure 1 illustrates a fuel cell comprising an anode section 10-12, a cathode section 18-20, an electrolyte membrane 8, and flow field plates 2, 2' (Col 2, lines 10-25/Figure 1); and air line 32 for feeding air (Col 2, lines 38-41) and fuel line 24 for feeding fuel (COL 2, lines 30-35).

Fuller et al disclose a method of operating a fuel cell system having a cathode catalyst, and a cathode reactant flow field comprising: upon shut-down of the fuel cell, introducing a low molecular weight alcohol into the water circulating loop, and at the beginning of a start-up sequence introducing a limited flow of oxidant into said cathode reactant flow field to combust the methanol (CLAIM 5). Fuller et al disclose a proton exchange membrane fuel cell having a methanol or ethanol fed (*hydrocarbon based material*) fed into the coolant passages during shut-down, and that upon start-up, a controlled amount of air is fed through the cathode reactant flow field so that alcohol diffusing to the cathode catalyst is oxidized (ABSTRACT/ COL 1, lines 4-12/ CLAIM 5). *Note that methanol/ethanol are hydrocarbon-based material which are highly volatile. Further note that Fuller et al disclose that alcohol diffuses to the cathode catalyst. Still further note that the alcohol is introduced into the fuel cell upon shutdown thereof. Therefore, there is a presence of such a hydrocarbon-based material in the cathode upon shutdown of the fuel cell, and thus, restoring operation to decrease cathode potential necessarily occurs.*

Alternatively, Fuller et al also encompass start-up of fuel cell, notice also that start-up takes place after a shutdown operation. Thus, there is also a hydrocarbon-based material in the cathode "after terminating operation of the fuel cell".

Accordingly, the present claim is fully anticipated.

6. Claim 108 is rejected under 35 U.S.C. 102(b) as being anticipated by Ueno et al 2001/0001287.

Ueno et al disclose a fuel cell power generating apparatus 1 using a stack 2 of a plurality of fuel cell units U each having a structure comprising a cathode 3 (ABSTRACT/FIGURES 1-2), an anode 4 and an electrolyte membrane 5 and having a fuel gas supply system 10 that supplies fuel to the anode and an air supply system 40 that supplies air to the cathode (ABSTRACT/ FIGURES 1-2). Separators 6 are disclosed (P0002/0032/FIGURE 2).

The fuel cell system of Ueno et al includes a water supply system 50 that supplies liquid water to the surface of the cathode (ABSTRACT/ CLAIM 1/P0013). Ueno et al disclose that when the fuel cell system is to be stopped, the first gas supplying means (the fuel), then the fuel gas discharge means and then said liquid water supplying means are stopped in this order (P0022). *It is noted that once the fuel gas discharge means is closed, normal operation of the fuel cell commences to cease, thereby a shutdown operation starts to take place. Therefore, Ueno et al implicitly disclose to supply water to the cathode after stoppage of normal operation of the fuel cell. Accordingly, water is supplied after the fuel gas supplying means is closed, and the restoring operation to reduce cathode potential does occur.*

Alternatively, Ueno et al also encompass start-up of fuel cell (P0014), notice also that start-up takes place after a shutdown operation. Thus, there is water in the cathode "after terminating operation of the fuel cell".

Response to Arguments

7. Applicant's arguments with respect to claims 107-108 have been considered but are moot in view of the new ground(s) of rejection. See items 5-6 above.

8. Applicant's arguments filed 01/23/07 have been fully considered but they are not persuasive. Since applicant overcame the 102 rejections over the JP'586 and the JP'421, there is no need to address applicant's arguments concerning those references.

9. With respect to applicant's arguments against the Dine et al reference, note that it is disclosed that upon an uncontrolled shut-down some of the residual hydrogen and some of the oxygen in their respective anode/cathode flow fields diffuse across the PEM (each to the opposite side of the cell) and react on the catalyst to form water (Dine et al, P0009). Consequently, this implies that the cathode receives water after terminating operation of the fuel cell, and thus, the restoring operation to decrease cathode potential inherently takes place at the cathode. Thus, Dine et al still contemplate the step of carrying out a restoration operation by supplying water to the cathode, that water being the water formed as a result of the residual hydrogen and oxygen reacting together.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Raymond Alejandro
Primary Examiner
Art Unit 1745